

CLAIMS

1. A method for controlling an operation of a compressor of a refrigerator comprising:

varying a cooling capacity of a compressor installed in a refrigerator by controlling a rotation direction of the compressor.

2. A method for controlling an operation of a compressor of a refrigerator comprising:

varying a cooling capacity of a compressor installed in a refrigerator by controlling a rotation direction of the compressor according to a load condition of the refrigerator,

wherein the cooling capacity of the compressor increases when the compressor is rotated clockwise and decreases when the compressor is rotated counterclockwise.

3. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which when the temperature inside the refrigerator and a pre-set defrosting temperature are identical, a defrosting operation is performed; and

a step in which when the defrosting operation is terminated, the compressor of the refrigerator is rotated clockwise, and the process of stopping or rotating the compressor counterclockwise at

every pre-set time is repeatedly performed.

4. The method of claim 3, further comprising:

a step in which when an operation mode of the refrigerator is selected by a user, a rotation direction of the compressor is selected according to an amount of cooling air supply corresponding to the selected operation mode, and the rotation speed of the selected rotation direction is controlled by varying an operation frequency of the compressor based on the temperature inside the refrigerator.

5. The method of claim 4, further comprising:

a step in which when the compressor is rotated clockwise according to the operation mode of the refrigerator, a value of a current applied to the compressor is detected, and if the detected current value is greater than a pre-set reference current value, the compressor is continuously rotated clockwise, and if the detected current value is smaller than the reference current value, the compressor is turned off; and

a step in which when the compressor is rotated counterclockwise according to the operation mode of the refrigerator, if the detected current value is smaller than the pre-set reference current value, the compressor is continuously rotated counterclockwise, and if the detected current value is greater than the reference current value, the compressor is turned off.

6. The method of claim 4, further comprising:

a step in which after the rotation direction of the compressor is sensed, if the rotation direction of the compressor needs to be changed according to a change of a temperature of the refrigerator, the operation of the compressor is stopped for a predetermined time and then the rotation direction of the compressor is changed.

7. The method of claim 3, further comprising:

a step in which when the operation mode of the refrigerator selected by the user is a power saving operation mode, the compressor is rotated counterclockwise, and then, when the temperature inside the refrigerator is higher than a pre-set temperature, the compressor is rotated clockwise; and

a step in which when the operation mode of the refrigerator selected by the user is a standard operation mode, the compressor is rotated clockwise, and then, when the temperature inside the refrigerator reaches the pre-set temperature, the compressor is rotated counterclockwise.

8. The method of claim 7, further comprising:

a step in which an operation range of a temperature sensor for sensing the temperature inside the refrigerator is set according to the rotation direction of the compressor and the temperature inside the refrigerator is sensed according to the set operation range.

9. The method of claim 8, wherein when the compressor is rotated clockwise, the operation range of the temperature sensor is $-0.5^{\circ}\text{C}\sim+0.5^{\circ}\text{C}$.

10. The method of claim 8, wherein when the compressor is rotated counterclockwise, the operation range of the temperature sensor is $-0.3^{\circ}\text{C}\sim+0.3^{\circ}\text{C}$.

11. The method of claim 8, wherein the refrigerant seal amount of the refrigerating cycle of the refrigerator is set as the amount of a refrigerator of the compressor when the compressor is rotated counterclockwise.

12. The method of claim 8, wherein the refrigerant seal amount of the refrigerating cycle of the refrigerator is calculated when a temperature of an evaporator itself of the refrigerator and a temperature of an entrance of the evaporator are identical while the compressor is being rotated counterclockwise, and the calculated refrigerant seal amount is set as a refrigerant seal amount of the compressor.

13. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which when an external temperature of the refrigerator is lower than a pre-set external temperature, the compressor is rotated counterclockwise; and

a step in which when the external temperature of the refrigerator is not lower than the pre-set external temperature, the compressor is rotated clockwise.

14. The method of claim 13, wherein the pre-set external temperature is 43°C.

15. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which when the internal temperature of the refrigerator is lower than a pre-set internal temperature, the compressor is rotated counterclockwise; and

a step in which when the internal temperature of the refrigerator is not lower than the pre-set internal temperature, the compressor is rotated clockwise.

16. The method of claim 15, wherein the pre-set internal temperature is 8°C.

17. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which when a door of the refrigerator is closed, a first temperature inside the refrigerator is sensed;

a step in which after a pre-set time elapses, a second temperature inside the refrigerator is sensed;

a step in which when a difference between the first and second temperatures is not lower than a pre-set reference temperature, the compressor is rotated clockwise; and

a step in which when the difference between the first and second temperatures is lower than the pre-set reference temperature, the compressor is rotated counterclockwise.

18. The method of claim 17, wherein the pre-set reference temperature is 3°C.

19. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which when power supplied to the refrigerator is cut off beyond a predetermined time and then re-supplied, the compressor is rotated clockwise;

a step in which when which when power supplied to the refrigerator is cut off within a predetermined time and then re-supplied, the compressor is rotated in the same direction as a direction of the compressor before power is cut off.

20. The method of claim 19, wherein the predetermined time is 7~100 minutes.

21. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which it is detected whether a rotation direction of a rotation direction select signal for rotating the compressor and an actual rotation direction of the compressor are identical according to the temperature inside the refrigerator; and

a step in which if the rotation direction of the rotation direction select signal and the actual direction of the compressor are different, the compressor is rotated in a direction opposite to the rotation direction of the rotation direction select signal.

22. The method of claim 21, wherein, in the step of rotating the compressor in the opposite direction, when the rotation direction of the rotation direction select signal and the actual rotation direction of the compressor are different, the compressor is rotated one time in the direction opposite to the rotation direction of the rotation direction select signal.

23. The method of claim 21, further comprising:

a step in which if the rotation direction of the rotation direction select signal and the actual direction of the compressor are the same, the compressor is rotated according to the rotation direction select signal.

24. The method of claim 21, wherein the actual rotation direction of the compressor is sensed through a rotation direction sensor installed at the compressor and the rotation

direction sensor generates a first or second signal according to the rotation direction of the compressor.

25. The method of claim 2, wherein the step of controlling the rotation direction of the compressor comprises:

a step in which the compressor of the refrigerator is rotated clockwise during a pre-set time; and

a step in which when the pre-set time elapses, the compressor is rotated counterclockwise.

26. The method of claim 25, wherein the pre-set time is time during which the temperature inside the refrigerator reaches near the temperature set by the user.

27. The method of claim 26, further comprising:

a step in which when the compressor is rotated counterclockwise and the temperature inside the refrigerator reaches the temperature set by the user, the operation of the compressor is stopped.

28. The method of claim 27, wherein if the temperature inside the refrigerator does not reach the temperature set by the user, the compressor is rotated counterclockwise at every pre-set period.

29. An apparatus for controlling an operation of a compressor of a refrigerator comprising:

a microcomputer for outputting a select signal for selecting a rotation direction of a compressor according to an operation mode of a refrigerator when the operation mode of the refrigerator is selected by a user;

an operation frequency converter for converting an operation frequency of a compressor according to a temperature in the refrigerator; and

a clockwise/counterclockwise rotation signal generating unit for selecting a rotation direction of the compressor based on the select signal and varying a rotation speed of the rotation direction of the compressor based on the converted operation frequency,

30. The apparatus of claim 29, further comprising:

a temperature sensor for sensing the temperature inside the refrigerator,

wherein an operation range of the temperature sensor is set based on the rotation direction of the compressor and the temperature sensor senses the temperature inside the refrigerator according to the set operation range.

31. The apparatus of claim 30, wherein when the compressor is rotated clockwise, the operation range of the temperature sensor is $-0.5^{\circ}\text{C}\sim+0.5^{\circ}\text{C}$.

32. The apparatus of claim 30, wherein when the

compressor is rotated counterclockwise, the operation range of the temperature sensor is $-3^{\circ}\text{C}\sim+0.3^{\circ}\text{C}$.

33. The apparatus of claim 29, further comprising:

a mode selector for outputting a mode select signal corresponding to a selected operation mode of the refrigerator when the operation mode selected by the user is a power saving operation mode or a standard operation mode,

wherein when the operation mode of the refrigerator is the power saving operation mode, the clockwise/counterclockwise rotation signal generating unit rotates the compressor counterclockwise, and then, when the temperature inside the refrigerator is higher than a pre-set temperature, the clockwise/counterclockwise rotation signal generating unit rotates the compressor clockwise; and

when the operation mode of the refrigerator is the standard operation mode, the clockwise/counterclockwise rotation signal generating unit rotates the compressor clockwise, and then, when the temperature inside the refrigerator reaches the pre-set temperature, the clockwise/counterclockwise rotation signal generating unit rotates the compressor counterclockwise.

34. The apparatus of claim 33, further comprising:

a current detecting unit for detecting a current applied to the compressor,

wherein when the compressor is rotated clockwise

according to the operation mode of the refrigerator, if the detected current value is greater than a pre-set reference current value, the microcomputer outputs an operation control signal for continuously rotating the compressor clockwise, and if the detected current value is smaller than the reference current value, the microcomputer outputs an operation control signal for turning off the compressor.

35. The apparatus of claim 34, wherein when the compressor is rotated counterclockwise according to the operation mode of the refrigerator, if the detected current value is greater than a pre-set reference current value, the microcomputer outputs an operation control signal for stopping the compressor, and if the detected current value is smaller than the reference current value, the microcomputer outputs an operation control signal for continuously rotating the compressor counterclockwise.